The W76 is a key component of the Nation's nuclear weapons stockpile.

LLNL's Verification and Validation (V&V) Program Receives High Marks

In June 2003, the Defense and Nuclear Technologies Director's Review Committee (DNT/DRC) "reviewed the LLNL approach to V&V, its progress and its plans." In its formal report that followed, the DRC stated: "The overall V&V strategy is sound. . . . We rate the V&V effort as *outstanding*."

The credibility of computational simulations depends on the degree to which the capability has been demonstrated through quantitative verification and validation evaluations. These involve comparisons of simulation results to known analytic/semi-analytic solutions (verification), to other, well-validated codes, and high quality data (validation). Among the significant recent accomplishments can be included: (1) completion of numerous documented V&V analyses, (2) development and application of weapon relevant semi-analytic verification problems, and (3) first round reliability and confidence quantification (application of V&V methodology) derived from model/data uncertainties for stockpile systems assessments. This method was also applied during W76 1X-109 Peer Review. Development of uncertainty quantification (UQ) approaches contributes directly to quantification of the quality of ASCI simulation and modeling capabilities. Verification and validation analyses performed this year have contributed directly to the evaluation of simulation quality and sufficiency when they are applied to important stockpile issues, including for the W76 1X-109 and SFI Peer Reviews, W80 LEP, SFI resolution and weaponization analyses for W87 and B83 issues, W88 and B61 Peer Review activities.

Contact: *Cynthia Nitta*
LLNL V&V Program Manager, Design Physics Group Leader
925-423-3792
nitta1@llnl.gov